CH-516TXAS

PC/CV Scaler over CAT5e/6/7 Transmitter with LAN/ RS-232/IR/Bidirectional PoE

Operation Manual

DISCLAIMERS

The information in this manual has been carefully checked and is believed to be accurate. Cypress Technology assumes no responsibility for any infringements of patents or other rights of third parties which may result from its use.

Cypress Technology assumes no responsibility for any inaccuracies that may be contained in this document. Cypress also makes no commitment to update or to keep current the information contained in this document.

Cypress Technology reserves the right to make improvements to this document and/or product at any time and without notice.

COPYRIGHT NOTICE

No part of this document may be reproduced, transmitted, transcribed, stored in a retrieval system, or any of its part translated into any language or computer file, in any form or by any means— electronic, mechanical, magnetic, optical, chemical, manual, or otherwise—without express written permission and consent from Cypress Technology.

© Copyright 2011 by Cypress Technology. All Rights Reserved.

Version 1.0 September 2011

TRADEMARK ACKNOWLEDGMENTS

All products or service names mentioned in this document may be trademarks of the companies with which they are associated.

SAFETY PRECAUTIONS

Please read all instructions before attempting to unpack, install or operate this equipment and before connecting the power supply.

Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Never spill liquid of any kind on or into this product.
- Never push an object of any kind into this product through any openings or empty slots in the unit, as you may damage parts inside the unit.
- Do not attach the power supply cabling to building surfaces.
- Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.
- Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person walk on it.
- To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit.

REVISION HISTORY

VERSION NO.	DATE DD/MM/YY	SUMMARY OF CHANGE
VR0	01/11/13	Preliminary release
VS1	09/10/13	Updated text/diagrams

CONTENTS

1. INTRODUCTION

The CH-516TXAS is an HDBaseT™ Transmitter Scaler supporting PC or Composite Video (CV) input. It can scale and switch the video sources, and send the digitalized signal over a single run of CAT5e/6/7 cable to the Receiver at a distance up to 100 meters, along with an external audio input, 2-way IR, RS-232 and bidirectional LAN serving. Control is via on-panel buttons or IR remote control and there is an On-screen Display (OSD) providing selection and system information. The device provides a full range of output resolutions, up to 1080p and WUXGA (RB). The bidirectional Power over Ethernet (PoE) function provides greater flexibility in installations.

2. APPLICATIONS

- Analog to Digital video signal conversion
- Up scale standard definition video to High-Definition TVs/displays
- Extend the operating distance of a CV/PC video signal
- Lecture room/Showroom/Meeting room/Classroom display and control

3. PACKAGE CONTENTS

- CV/PC to CAT5e/6/7 with LAN/IR/RS-232/Bidirectional PoE Transmitter
- 1×IR Extender
- 1×IR Blaster
- 24 V/2.7 A DC Power Adaptor
- Remote Control (CR-128)
- Operation Manual

4. SYSTEM REQUIREMENTS

CV/PC source equipment such as a DVD/Video player or PC/Laptop and output to HDBaseT compatible Receiver.

5. FEATURES

- Supports PC/CV scaling to a full range of HDTV or PC resolutions up to 1080p and WUXGA (RB)
- Transmission of uncompressed data over a single CAT5e/6/7 cable up to 100m/328ft
- 5Play™ convergence: Video and Audio, LAN serving, bidirectional Power over Ethernet (PoE) and Control (IR/RS-232 bypass)
- Supports IR, Remote control, RS-232 (bypass) and on-panel controls
- Provides bidirectional 24V DC power to or receive from compatible PoE Receiver through CAT5e/6/7 cable
- Supports Ethernet transmission rates up to 100 Mbps
- Supports NTSC and PAL formats for Composite Video input

Note:

1. *This system was tested with CAT6/23AWG cables, results may vary with cables of different specifications.*

2. *The PoE function is designed for powering compatible Receiver units only—non-PoE Receivers will need their own power supply. Receivers from other brands may not be compatible.*

3. *DO NOT connect the LAN connection to the CAT5e/6/7 port. Doing so may cause a power shutdown and may damage the device.*

6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel
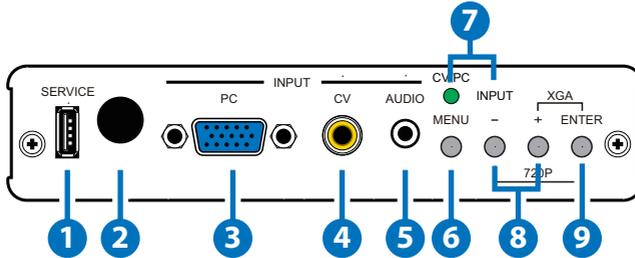
1 **SERVICE:** Reserved for manufacturer use only.

2 **IR RECEIVER WINDOW:** Receives only the IR signal from the supplied remote control for this device only.

3 **PC:** Connect to a PC/Laptop source device with a D-Sub 15pin cable.

4 **CV:** Connect to a composite video source such as a DVD/Video player.

5 **AUDIO:** Connect to an analog stereo (L/R) audio source with a 3.5mm mini-jack cable.

6 **MENU:** Press this button to enter the On-Screen Display (OSD) menu.

7 **INPUT (−) Button & CV/PC LED:** Press the INPUT (−) button to toggle between CV or PC inputs. When in CV mode the LED will be lit, off when in PC mode.

8 **−/+:** Use these buttons to navigate down and up in the on-screen menu.

**9** **ENTER:** Press this button to confirm the selection.

Note:

Pressing '−' (MINUS) and ENTER simultaneously will immediately switch the output resolution of the device to 720p60.

Pressing '+' (PLUS) and ENTER simultaneously will immediately switch the output resolution of the device to XGA (1024×768).

6.2 Rear Panel
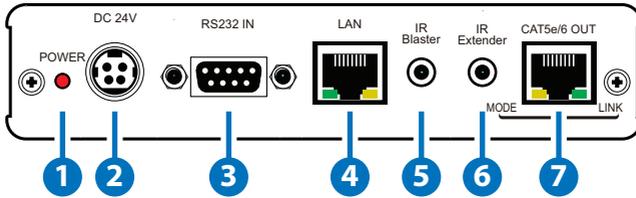
1 **POWER LED:** This LED will illuminate when the device is connected to an active power supply.

2 **DC 24V:** Connect the 24 V DC power supply to the unit and plug the adaptor into an AC outlet. Only one unit requires powering if both the Transmitter and Receiver are both PoE compatible.

3 **RS-232 IN:** Connect to a PC or RS-232 control system with a D-Sub 9 pin male cable for the transmission of RS-232 commands.

4 **LAN:** Connect to an active network for LAN serving. When any compatible LAN equipped receivers are connected, this allows the network access (including internet access if available) to be shared between any connected LAN equipped receivers. Connect any Ethernet equipped device e.g. a Smart TV or games console to the LAN port of a receiver for that device to share the network/internet access.

Warning: DO NOT connect the LAN connection to the CAT5e/6/7 port. Doing so may cause a power shutdown and may damage the device.

5 **IR Blaster:** Connect the supplied IR Blaster cable for IR signal transmission. Place the IR Blaster in direct line-of-sight of the equipment to be controlled.

6 **IR Extender:** Connect the supplied IR Receiver cables for IR signal reception. Ensure that remote being used is within the direct line-of-sight of the IR Extender.

7 **CAT5e/6/7 OUT:** Connect to the Receiver unit with a single CAT5e/6/7 cable for transmission of all data signals.

MODE LED: This LED will illuminate when the power is connected.

LINK LED: This LED will illuminate when connected to a Receiver unit that is connected with a TV/monitor that is displaying the signal.

6.3 Remote Control

1 **INPUT:** Press this button to toggle between the CV or PC input.

2 **EXIT:** Press this button to exit the menu or the current selection in the on-screen menu.

3 **MENU:** Press this button to enter into the OSD menu.

4 **RESET:** Press this button to return the device to the factory default settings.

5 **AUTO ADJUST:** Press this button to optimize the positioning of the picture (picture centering) on the screen.

6 **OK & ▲ ▼ ◄ ►:** Press 'OK' to confirm the selection or use the directional buttons to navigate the on-screen menus.
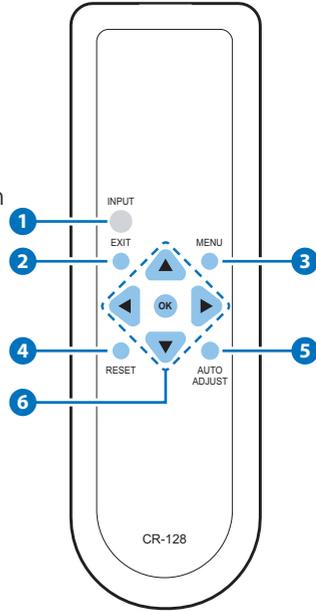
6.4 IR Cable Pin Assignment

IR Blaster

1 Power
2 IR Blaster Signal
3 NC

IR Extender

1 IR Signal
2 Power
3 Ground
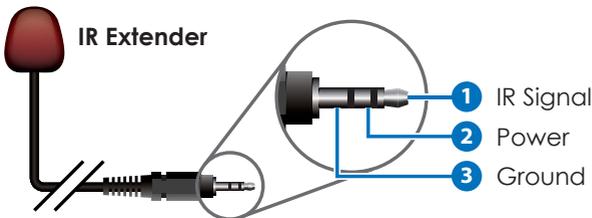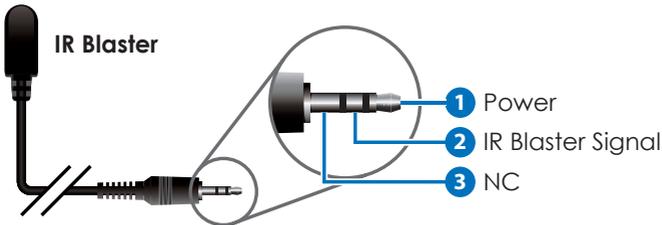
6.5 RS-232 Pin Definitions

PIN	DEFINE TX / RX
1	N/C
2	TxD/RxD
3	RxD/TxD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

Baud Rate: 9600bps

Data bit: 8 bits

Parity: None

Flow Control: None

Stop Bit: 1

6.6 RS-232 Commands

COMMAND	DESCRIPTION	
S SOURCE 1~2	1=VIDEO 2=PC	
R SOURCE	Reports the numerical equivalent for the SOURCE setting (as listed above)	
S OUTPUT 0~25	0=Native	12=1600×1200
	1=640×480	13=1920×1080
	2=800×600	16=1920×1200
	3=1024×768	17=480p
	5=1360×768	18=720p@60
	6=1280×720	19=1080p@60
	7=1280×800	20=1080i@60
	8=1280×1024	22=576p
	9=1440×900	23=720p@50
	10=1400×1050	24=1080p@50
	11=1680×1050	25=1080i@50
R OUTPUT	Reports the numerical equivalent for the OUTPUT setting (as listed above)	
S SIZE 0~6	0=OVERSCAN	4=LETTER BOX
	1=FULL	5=UNDER 2
	2=BEST FIT	6=UNDER 1
	3=PAN SCAN	
R SIZE	Reports the numerical equivalent for the SIZE setting (as listed above)	
S CONTRAST 0~60	Sets the numerical value for the CONTRAST setting (0~60)	
R CONTRAST	Reports the numerical value for the CONTRAST setting (0~60)	
S BRIGHTNESS 0~60	Sets the numerical value for the BRIGHTNESS setting (0~60)	
R BRIGHTNESS	Reports the numerical value for the BRIGHTNESS setting (0~60)	

COMMAND	DESCRIPTION	
S HUE 0~60	Sets the numerical value for the HUE setting ((0~60)	
R HUE	Reports the numerical value for the HUE setting (0~60)	
S SATURATION 0~60	Sets the numerical value for the SATURATION setting (0~60)	
R SATURATION	Reports the numerical value for the SATURATION setting (0~60)	
S SHARPNESS 0~30	Sets the numerical value for SHARPNESS setting (0~30)	
R SHARPNESS	Reports the numerical value for the SHARPNESS setting (0~30)	
S NR 0~3	0=OFF	2=MIDDLE
	1=LOW	3=HIGH
R NR	Reports the numerical equivalent for the NOISE REDUCTION setting (as listed above)	
S AUDIO DELAY 0~3	0=OFF	2=110ms
	1=40ms	3=150ms
R AUDIO DELAY	Reports the numerical equivalent for the AUDIO DELAY setting (as listed above)	
S AUDIO MUTE 0/1	0=ON	1=MUTE
R AUDIO MUTE	Reports the numerical equivalent for the AUDIO MUTE setting (as above)	
S KEY LOCK 0/1	0=ENABLE	1=DISABLE
R KEY LOCK	Reports the numeric equivalent for the KEY LOCK setting (as listed above)	
FW	Checks the FIRMWARE version	
S RESET 1	Sets the numerical equivalent for the RESET setting (as left)	

Note:

1. *RS-232 commands will not execute unless followed by a carriage return and LF (Line Feed).*
2. *Commands are not case-sensitive.*
3. *Resolutions 1~16 are RGB encoded and 17~25 are YUV encoded.*

6.7 OSD Menu

1ST LAYER	2ND LAYER	3RD LAYER	4TH LAYER
DISPLAY	OUTPUT	Native	
		640x480 60	
		800x600 60	
		1024x768 60	
		1360x768 60	
		1280x720 60	
		1280x800 60	
		1280x1024 60	
		1440x900 60	
		1400x1050 60	
		1680x1050 60	
		1600x1200 60	
		1920x1080 60	
		1920x1200 60	
		720x480P 60	
		1280x720P 60	
		1920x1080I 60	
		1920x1080P 60	
		720x576P 50	
		1280x720P 50	
		1920x1080I 50	
		1920x1080P 50	
SIZE	SIZE	OVER SCAN	
		FULL	
		ASPECT RATIO	
		PAN SCAN	
		LETTER BOX	
		UNDER 2	
		UNDER 1	

1ST LAYER	2ND LAYER	3RD LAYER	4TH LAYER
SIZE	MODE INFO	**INFO**	
		ON	
		OFF	
	PC (PC mode only)	AUTO SETUP	NO
			YES
		H_POSITION	0~60 (30)
		V_POSITION	0~60 (30)
		PHASE	
		CLOCK	
		WXGA/XGA	**XGA**
			WXGA
	RESET	NO	
		YES	
COLOR	COLOR	R	
		G	
		B	
		R OFFSET	
		G OFFSET	
		B OFFSET	
	CONTRAST	0~60	
	BRIGHTNESS	0~60	
	HUE	0~600~60	
	SATURATION	0~60	
	SHARPNESS	0~60	
	NR.	**OFF**	
		LOW	
		MIDDLE	
		HIGH	

1ST LAYER	2ND LAYER	3RD LAYER	4TH LAYER
AUDIO	VOLUME	0~100	
	DELAY	**OFF**	
		40ms	
		110ms	
		150ms	
	SOUND	**ON**	
		MUTE	
SETUP	FACTORY RESET	**NO**	
		YES	
	KEY LOCK	**OFF**	
		ON	
INFORMATION	INPUT		
	OUTPUT		
	REVISION		

*Note: Items in **Bold** are the default settings.*

6.8 Input Resolutions Support

INPUT RESOLUTION	CV	PC
NTSC/PAL	✓	-
VGA@60/72/75 Hz	-	✓
SVGA@56/60/72/75 Hz	-	✓
XGA@60/70/75 Hz	-	✓
SXGA@60/75 Hz	-	✓
UXGA@60 Hz	-	✓
1280×800@60 Hz	-	✓
1680×1050@60 Hz (RB)	-	✓
1920×1080@60 Hz	-	✓

7. CONNECTION DIAGRAM
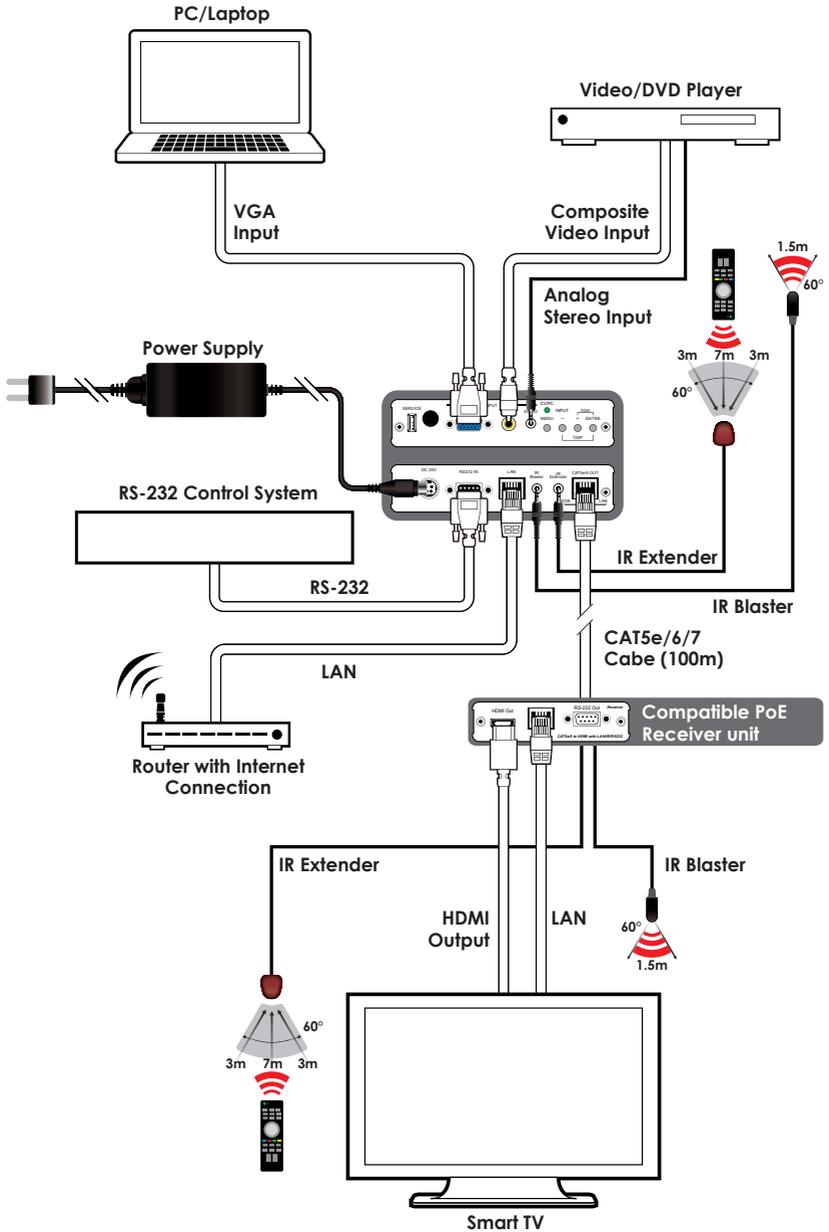
8. SPECIFICATIONS

8.1 Technical Specifications

Ethernet Speed	100 Mbps
Output Video Bandwidth	300MHz / 10.2Gbps
Input Ports	1×Composite Video, 1×VGA, 1×3.5mm Mini-jack (L/R), 1×RS-232, 1×LAN, 1×IR Extender
Output Ports	1×CAT5e/6/7, 1×IR Blaster
CAT5e/6/7 Out Cable Distance	Up to 100 Meters
CV Resolutions Support	NTSC/PAL
VGA Resolutions Support	VGA~WUXGA (RB)
CAT5e/6/7 Resolutions Support	HD: Up to 1080p@60 Hz PC: Up to WUXGA (RB)
IR Frequency	30~50 kHz
ESD Protection	Human body model: ±8kV (air-gap discharge) ±4kV (contact discharge)
Dimensions	145 mm (W)×192 mm (D)×30 mm (H)/Jacks Excluded 145 mm (W)×202 mm (D)×30 mm (H)/Jacks Included
Weight	606 g
Chassis Material	Aluminum
Color	Black
Operating Temperature	0 ˚C~40 ˚C / 32 ˚F~104 ˚F
Storage Temperature	−20 ˚C ~ 60˚C / −4 ˚F ~ 140 ˚F
Relative Humidity	20 ~ 90 % RH (non-condensing)
Power Consumption	16 W

8.2 CAT5e/6/7 Cable Specification

Cable Type	Range	Pixel Clock Rate	Video Data Rate	Supported Video
CAT5e/6/7	100 m	≤225 MHz	≤5.3 Gbps (HD Video)	Up to 1080p, 60 Hz, 36 bits, 3D (data rates lower than 5.3 Gbps or below 225 MHz TMDS clock).

9. ACRONYMS

ACRONYM	COMPLETE TERM
CAT5e	Category 5 Cable
CAT6	Category 6 Cable
CAT7	Category 7 Cable
CV	Composite Video
DVI	Digital Visual Interface
HDMI	High-Definition Multimedia Interface
IR	Infrared
WUXGA (RB)	Widescreen Ultra Extended Graphics Array (Reduced blanking)